

REMARKS

With this amendment Applicant cancels claims 2, 4, 5, 9, 11, 12, 16, 18 and 19. Claims 1, 3, 6-8, 10, 13-15, 17 and 20-23 are all the claims pending in the application.

I. Claim Objection

The Examiner has objected to claim 21 because it is allegedly indefinite.

Applicants submit that the modifications to claim 21 obviate the objection.

II. Claim Rejections

1) The Examiner has rejected claims 1, 2, 8, 9, 15, 16, 21 and 23 under 35 U.S.C. §

102(b) as being anticipated by Chen *et al.* (US 5,452,165) [“Chen”].

2) The Examiner has rejected claims 4, 6, 11, 13, 18 and 20 under 35 U.S.C. § 103(a) as

being unpatentable over Chen.

3) The Examiner has rejected claims 3, 5, 7, 10, 12, 14, 17, 19 and 22 under 35 U.S.C. §

103(a) as being unpatentable over Chen in view of White (US 5,285,331) [“White”].

For at least the following reasons, Applicant traverses the rejection.

The subject matter of claim 4 has been incorporated into independent claims 1 and 21.

Therefore, Applicant will address the § 103 rejection of original claim 4 and will also address the teachings of White.

Claim 1 recites a magnetic tape drive including a “head unit ... [that] comprises ... a plurality of recording heads ... with adjacent recording heads having different azimuth angles ... a plurality of reproducing heads ... having the same azimuth angle as the azimuth angle of the corresponding recording head ... [and] sub-reproducing heads disposed on both sides of each

reproducing head in the width direction of the magnetic tape, and the lengths and azimuth angles of the sub-reproducing heads are the same as the lengths and azimuth angles of the respective reproducing head.”

The Examiner contends that it would have been obvious to modify the reading of Chen with three read elements per track or per write element to provide the telemetry of the center of the track or the signal strength. The Examiner then cites column 6, lines 14-59, of Chen as allegedly supporting his contentions. Office Action at pages 6-7.

Applicant submits that the cited text merely describes a head linear array that is skewed so that each head is positioned to read from or write to a respective track (col. 6, lines 17-21). Because of this skew, there is a time delay in writing between any adjacent two heads (see col. 6, lines 35-37). The cited section also discloses that the adjacent two heads have different azimuth angles with respect to each other, and because of the different azimuth angles, overwriting on the adjacent track can be ignored to some extent (see col. 6, lines 42-51).

Applicant submits that, contrary to the Examiner’s contentions, there is no description with respect to providing a plurality of reproducing heads per track or with respect to obtaining a signal strength. Therefore, the Examiner’s proffered reason for contending that the claimed arrangement of the sub-reproducing heads would have been obvious is not supported in the prior art, and the Examiner has failed to make a *prima facie* case of obviousness.

Applicant also submits that the Examiner’s proffered reason is not supported by White since White does not disclose or suggest an arrangement of 3 heads in a tape-width direction to

obtain “telemetry of the center of the track,” which the Examiner contends is a basis for rendering obvious the claimed feature.

In addition, the Examiner also contends that Chen describes various configurations for combining the head elements. Office Action at page 6.

Applicant submits that the alleged “various configurations for combining the head elements” do not disclose or suggest the claimed azimuth angle relationship between the recording heads and the reproducing or the claimed arrangement of the sub-reproducing heads as set forth in claim 1.

Chen discloses in col. 5, lines 37-45, head elements with an azimuth angle and without an azimuth angle. In col. 5, lines 55-59, Chen discloses that its system provides “as many heads as there are tracks to read and write plus any additional heads required for extracting servo data from one or more servo tracks,” i.e, the number of magnetic heads correspond to the sum of the number of tracks for reading and writing and the number of servo tracks. For example, in col. 6, lines 14-17, Chen discloses six heads (four heads for the data tracks and two for the servo tracks). Chen also discloses that the number of data tracks may range from 4 to 32 and that the present invention provides a magnetic head for each track (col. 6, lines 29-31). In col. 6, lines 57-59, Chen discloses the relationship between the spacing D between the magnetic heads, the track pitch T and the skew angle θ . Finally, in col. 7, lines 26-52, Chen discloses that its head linear array 40 may be configured to operate with a disk drive rather than a tape drive.

Therefore, Applicant submits that the disclosures in Chen regarding the heads merely relate to matching the number of heads included in a head linear array to the number of tracks

and to an angle of the head linear array. There is no disclosure or suggestion with respect to the claimed azimuth angle relationship between the recording heads and the reproducing heads or with respect to the claimed arrangement of the sub-reproducing heads as set forth in claim 1.

Although White may disclose a combination of a recording head and a reproducing head (claim 1 and col. 7, lines 36-39, of White), the disclosure of White uses only one recording head and one reproducing head. White does not disclose or suggest the claimed azimuth angle relationship between the recording heads and the reproducing heads or with respect to the claimed arrangement of the sub-reproducing heads as set forth in claim 1.

Therefore, for at least the reasons given above, Applicant submits that claim 1 is patentable over Chen and White (either alone or in combination).

Applicants submits that claims 3, 6-8, 10, 13-15, 17 and 20, 22 and 23 are patentable at least by virtue of their dependency on claim 1.

Because the claimed arrangement of the sub-reproducing heads as set forth in claim 21 is analogous to that given above with respect to claim 1, Applicant submits that claim 21 is patentable for at least reasons analogous to those given above with respect to claim 1.

In addition, claim 21 recites “a first set of a plurality of recording heads” and “a second set of a plurality of recording heads” and “a plurality of reproducing heads ... [each reproducing head] disposed between a corresponding recording head of the first set and a corresponding recording head of the second set.” The Examiner contends that Fig. 4 of Chen illustrates that a first recording head and a second recording head are disposed in a longitudinal direction in the

head unit and that, in Figs. 16 and 18, a reproducing head is disposed between the first recording head and the second recording head. Office Action at page 4.

Applicant submits that the disclosure of Chen merely describes a linear array of 2 or 6 recording heads (or reproducing heads). Chen does not disclose or suggest two arrays of recording heads or an array of reproducing heads disposed between two arrays of recording heads. In fact, there is no description or suggestion with respect to disposing two or more heads on one track.

At most, Chen discloses that one head may have only a recording function, only reproducing function, or both a recording/reproducing functions (see col. 3, lines 16-17, col. 6, lines 20-21, col. 6, lines 35-37). However, Chen uses the term “head” without distinguishing between recording and reproducing. Thus, Chen does not disclose or suggest the claimed arrangement of the reproducing heads between the first and second sets of recording heads as set forth in claim 21. White does not cure this deficiency.

III. Conclusion

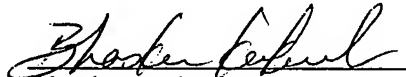
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Amendment under 37 C.F.R. § 1.114(c)
U.S. Serial No. 10/688,931

Attorney Docket No.: Q78103

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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